

## DOCKETED

<b>Docket Number:</b>	17-AAER-09
<b>Project Title:</b>	Tub Spout Diverters
<b>TN #:</b>	220816
<b>Document Title:</b>	RE DOCKET NO. 17-AAER-09 TUB SPOUT DIVERTERS
<b>Description:</b>	N/A
<b>Filer:</b>	System
<b>Organization:</b>	Gary Klein
<b>Submitter Role:</b>	Public
<b>Submission Date:</b>	8/17/2017 8:14:22 AM
<b>Docketed Date:</b>	8/17/2017

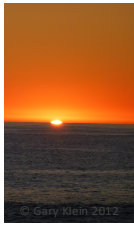
*Comment Received From: Gary Klein*

*Submitted On: 8/17/2017*

*Docket Number: 17-AAER-09*

**RE: DOCKET NO. 17-AAER-09 TUB SPOUT DIVERTERS**

*Additional submitted attachment is included below.*



## Gary Klein and Associates, Inc.

11891 Autumn Sunset Way, Suite A  
Rancho Cordova, CA 95742

Telephone: 916-549-7080

Email: [Gary@GaryKleinAssociates.com](mailto:Gary@GaryKleinAssociates.com)

August 17, 2017

Ryan Nelson  
California Energy Commission  
Docket Unit, MS-4  
1516 Ninth Street  
Sacramento, CA 95814-5512

### RE: DOCKET NO. 17-AAER-09 TUB SPOUT DIVERTERS

Dear Mr. Nelson.

On May 11, 2017 the California Energy Commission made known during their Phase 2 Pre-Rulemaking Webinar that staff is considering reducing the leakage rate for tub spout diverters below the current requirements of 0.01 gpm when new (pre-life cycle) and 0.05 gpm after 15,000 cycles (post-life cycle).

Having worked at the CEC in varying capacities for nearly 19 years and serving as Second Advisor to former Commissioner John Geesman, my areas of policy responsibility included the water energy connection. Since leaving the Energy Commission in 2007 I have continued working with manufacturers, trade associations, codes and standards bodies, non-profits as well as governmental oversight and regulatory bodies in my consultancy to champion and implement improved energy efficiency by reducing the wastes found in hot water systems in all occupancies. This is my life's work and I applaud the Energy Commission's efforts to continue improving the efficiency of California's domestic hot water systems, their associated appliances and fixtures and, in particular, tub spout diverters.

Given the recent feedback from both manufacturers and trade associations regarding the performance of tub spout diverters and the Energy Commission's continued exploration of the matter, I would like to offer the following observations:

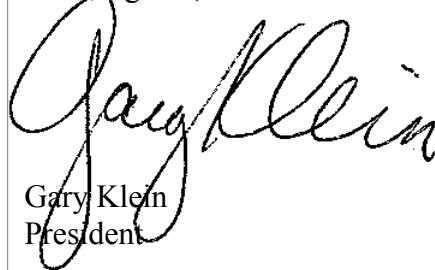
- **Reducing the leakage rate for tub spout diverters without changing life-cycle testing procedures will NOT increase tub spout diverter efficiency.** Namely, the current testing procedures do not account for poor water quality or the build-up of mineral deposits over time. These items are likely key factors contributing to tub spout diverter leaks. Research should be completed to confirm this assumption and to determine if there are viable and cost-effective means for accurately simulating mineral build-up during life-cycle testing prior to further reducing leakage rates. Merely reducing rates to zero while maintaining the current testing protocols is apt to enable the continued installation of "future leakers" in California buildings.

- **Addressing behavioral waste during shower warm-up saves significantly more water and energy than further reducing tub spout diverter leakage rates.** Assuming a typical 8-minute shower, eliminating tub spout diverter leaks results in incremental deemed savings of 10 - 50 ounces of hot water per shower. Conversely, data collected from a study of California homes by Lawrence Berkley National Lab suggests that eliminating behavioral waste results in savings of 2 - 5 gallons of hot water per shower. Products for eliminating behavioral waste, such as thermostatic showerheads and tub spouts are cost effective, commercially available and are currently deployed in IOU ratepayer funded conservation and weatherization programs throughout California.
- **Auto reset, can be an important feature for maximizing energy efficiency as well as bather comfort and convenience.** Specifically, auto reset defaults showers to a "tub spout warm-up" once bathers "turn the shower on" and wait for hot water to arrive. The much higher tub spout velocities (~5 gpm for tub spouts vs. ~2 gpm for showerheads) reduce thermal losses during the initial transmission of hot water. This decreases the volume of water that must be purged before hot water arrives by 50-100%. Simultaneously, higher velocity "tub spout warm-ups" improve bather comfort and convenience by cutting hot water waits in half.

However, if auto reset is not coupled with a thermostatic tub spout or showerhead, it can significantly increase water and energy waste during the shower warm-up. This occurs because a meaningful percentage of the population habitually "turns the shower on" and leaves to do something else while waiting for hot water to arrive (behavioral waste). As a result, hot water is being wasted at a rate of ~5 gpm vs. a rate of ~2 gpm through showerheads.

Thank you for your efforts to reduce hot water consumption. I firmly believe that doing so can be achieved while simultaneously improving bather comfort and convenience. I look forward to discussing this opportunity further with the California Energy Commission.

Best Regards,



Gary Klein  
President